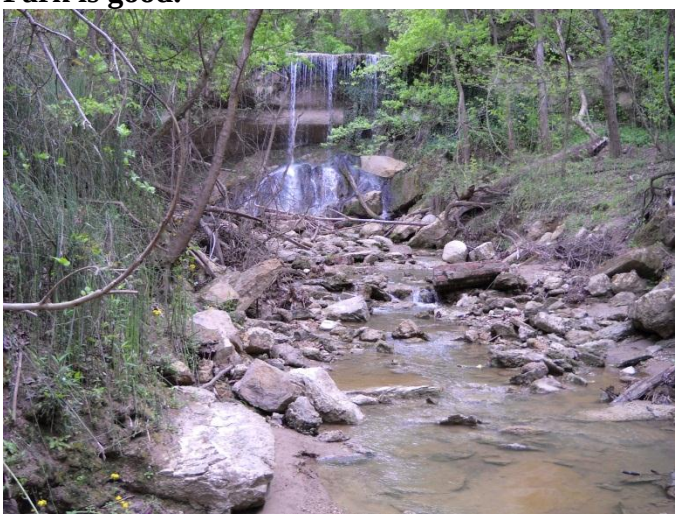
Vicksburg National Military Park
Water Quality Summary Calendar Year 2012

Water quality at Vicksburg National Military Park is good.



Mint Springs Bayou, April 6, 2009. Image by Joe Meiman.

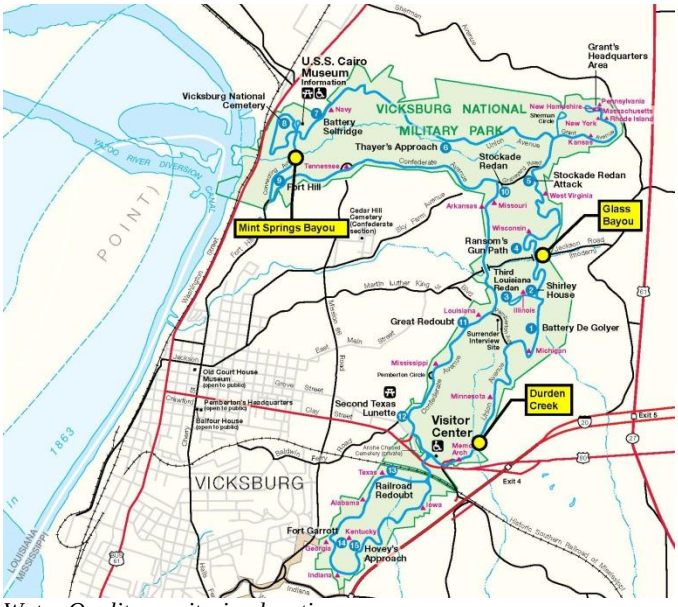
Vicksburg National Military Park drains via three small, perennial streams: Mint Spring Bayou, Glass Bayou, and Durden Creek, as well as numerous ephemeral and seasonal streams. Mint Spring and Glass bayous drain into the Yazoo River while Durden Creek flows into Hatcher Bayou, which flows into the Mississippi River. Mint Spring Bayou is divided into the upper and lower reaches by a 10 meter high (33 feet) waterfall. This waterfall, located adjacent to the Vicksburg National Cemetery, forms a natural impediment to upstream fish movement; only one species of fish — the exotic fathead minnow (*Pimephales promelas*) — exists above the falls. All park streams respond immediately to rainfall events; clear base-flow gives way to extremely turbid storm flow as the steeply sloped loess terrain provides ample runoff.

The Gulf Coast Network Inventory and Monitoring Program began long-term water quality monitoring at Vicksburg National Military Park in August 2007. Water quality is measured by park staff every quarter at three sites; Durden Creek at Union Avenue, Glass Bayou at Union Avenue and Mint Springs Bayou at Connecting Road above the falls (see map). Field measures include water temperature (Temp), specific conductance (SpC), pH, dissolved oxygen (DO) and turbidity (Turb).

Highlights of Calendar Year 2012 Monitoring

There were 3 violations of a state water quality documented during CY12.

Site	Temp	SpC	pH	DO	Turb
Durden Creek	0	0	1	0	0
Glass Bayou	0	1	0	0	0
Mint Springs Bayou	0	0	1	0	0



Water Quality monitoring locations.

Specific conductance of park streams is naturally high, as watersheds are predominantly underlain by Cenozoic limestone and groundwater highly influences stream chemistry. Limestone ($CaCO_3$) is dissolved by rainfall and thus increases the streams' ionic loads (primarily calcium and bicarbonate ions), elevating SpC values above the state limit of 1000 µS/cm (micro Siemens per centimeter). This is a natural characteristic of park waters.

Due to the high amounts of dissolved bicarbonate ions found in park streams, pH is near-neutral to slightly alkaline. It is common that pH may exceed the state upper limit of 9.0 SU (Standard Units), and like SpC, elevated pH is a natural condition of park waters.

Dissolved oxygen is typically well above the state's instantaneous standard of 4.0 mg/l. However, while not documented in CY12, the turbidity of park waters can become very high after even a light rainfall as loess soils are easily eroded and transported into streams.

Water Quality Standards

The state of Mississippi has not assigned specific designated uses, which are used to set water quality standards, to park streams. By adapting the same rationale as used by the state, Mississippi Fish and Wildlife standards can be applied to park streams

Water Temperature	<32.2°C
Specific Conductance	<1000 µS/cm
pH	between 6 and 9 SU
Dissolved Oxygen	>4.0 mg/l
Turbidity	<50NTU

Water quality data are available upon request to the Gulf Coast Network or our website:
http://science.nature.nps.gov/im/units/guln/index.cfm